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| **NAME OF DEPARTMENT:** | | | | | | | | | | | | | | | | | | School of Computing | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Subject Name:** | | | | | | | | Software Engineering | | | | | | | | | | | | | | | | | | | | | | | | | **Subject Code:** | | | | | | | | TBC 504 | | | |
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| **Course Name:** | | | | | | | | Bachelor of Computer Applications (BCA) | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | |  | | | |
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| **1** | **Contact Hours:** | | | | | | | | | | 45 | | | |  | | | | | | | | | | | | | | | | | | | **L** | | 3 | | | **T** | | |  | **P** | 0 | |
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| **2** | **Examination Duration (Hrs):** | | | | | | | | | | | | | | | | | | | |  | **Theory** | | | | | 0 | 3 |  | **Practical** | | | | | 0 | | 0 | |  | | | | | |
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| **3** | **Relative Weightage:** | | | | | | | | | | | |  | | | | | **CWE:** | | | | | | | 25 | | **MTE:** | | | 25 | | **ETE:** | | | | 50 | | | |  | | | | |
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| **4** | **Credits:** | | | | | 0 | | | 3 | |  | | | | | | | | | | | | |  | | |  | | |  | |  | | | |  | | | |  | | | | |
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| **5** | **Semester:** | | | | | | **\*** | | | |  | | |  | | |  | | |  | | |  | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | **Autumn** | | | | | | | **Spring** | | | | | | | **Both** | | | | | | |  | | | | | | | | | | | | | | | | | | |
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| **6** | **Pre-Requisite:** | | | | | | | | | | **Knowledge of Software development** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **7** | **Subject Area:** | | | | | | | | | | **Computer Application** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **8** | **Objective:** | | | | | | | | | **To familiarize students with the Software Engineering** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **9** | **Course Outcomes:** | | | | | | | | | | | | | A student who successfully fulfills the course requirements will be able to: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 1** | | | | | | | | | | | | | Understand software, role, application, development and development challenges. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 2** | | | | | | | | | | | | | Understand the software development process and models. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 3** | | | | | | | | | | | | | Analyze the life cycle approach and software project management. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 4** | | | | | | | | | | | | | Understand the role of Software testing techniques and challenges. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **CO 5** | | | | | | | | | | | | | Understand about Software Quality and quality assurance. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **10** | | **Details of the Course:** | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Unit No.** | | | | **CONTENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **CONTACT HOURS** | | | | | | |
| **1** | | | | **Introduction:** Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems, Software quality & its relevance, Software Development Life Cycle.  Model: Waterfall Model, Prototyping, Incremental Model, RAD, Spiral Model. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **2** | | | | **Software Requirement Engineering:** Requirements elicitations,Problem Analysis, Requirement specifications, SRS plan and documentation.  **Software-Design:** Design principles, problem partitioning, abstraction, top down and bottom up-design, Structured approach, functional versus object-oriented approach, design specifications and verification, Monitoring and Control, Cohesiveness, coupling, Fourth generation techniques, Functional independence. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **3** | | | | **Coding:** structured programming, programming style and internal documentation.  **Testing:** Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, reliability assessment, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging, Software Maintenance. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **4** | | | | **Software Reliability & Quality Assurance:** Reliability issues, Reliability metrics, Role of matrices and measurement, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, and comparison between ISO & SEI CMM. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **5** | | | | **Software Project Management:** The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, quality assurance, project monitoring, risk management, Role of management in software development**.**  **CASE (Computer Aided Software Engineering):** CASE and its Scope, CASE support in software life cycle, Documentation, Project Management, internal interface, Reverse Software Engineering, Architecture of CASE environment. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
|  | | | | **TOTAL** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **45** | | | | | | |
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| **11** | | **Suggested Books:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | |
| **Sl. NO.** | | | **NAME OF AUTHORS/BOOKS/PUBLISHERS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **YEAR OF PUBLICATION** | | | | | |
| **1** | | | Roger S. Pressman: Software Engineering, 5th Edition, Tata McGrew Hill. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2001 | | | | | |
| **2** | | | Ian Sommerville: Software Engineering, 9th Edition, PHI. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2011 | | | | | |
| **3** | | | Pankaj Jalote: An Integrated Approach to Software Engineering, 3rd edition, Springer. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2005 | | | | | |